IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re App.:	10/565,901	)	PATENT APPLICATION
Filing Date:	January 24, 2006	)	Art Unit: 1791
Inventor:	Herring	)	Examiner: X. Liu
Title:	*Method and Apparatus for Forming a Moulding*	)	Customer No.: 28554

APPELLANT'S BRIEF

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APPELLANT'S BRIEF

I. REAL PARTY IN INTEREST

The real party in interest is assignee Intelligent Mobile Marketing Ltd., a UK company with its principal place of business in Gloucester, UK.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF THE CLAIMS

Claims 50-55 and 57-84 stand finally rejected in the Office Action dated September 11, 2009, and are the subject of this appeal.

Claims 1-49, 56 and 85 have been previously cancelled, and Claims 86-98 have been previously withdrawn as drawn to non-elected subject matter.

IV. STATUS OF AMENDMENTS

There were no amendments proposed after the final rejection, and the list of claims on appeal is attached as the Claims Appendix.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The claims on appeal are directed to methods of forming a moulded article by an injection molding process. The only independent claim at issue in this appeal is claim 50, which reads:

> 50. A method of forming a moulding by multiple injection moulding, said method comprising:
>
> injecting a first material into a mold;
>
> injecting at least a second material into said mold behind said first material so that said first material covers a surface of said mould, wherein at least one of said materials includes magnetic particles; and

applying one or more magnetic fields to at least a portion of at least one of said materials so as to change the orientation and/or distribution of magnetic particles in at least one of said materials.

Fig. 5 (reproduced below) shows an embodiment of a dual injection molding machine with a two-part mold 10 defining a cavity 14 between the first half 12 and the second half 13 of the mold. The cavity 14 communicates with an inlet port 22 in the second half 13 of the mold. The inlet port 22 is gated by a rotary valve 20 located between the inlet port and a block 15. The block 15 includes a first passageway 16 for receiving materials from a first extruder 17 and a second passageway 18 for receiving materials from a second extruder 19. Permanent magnets 21 are arranged within the halves 12, 13 "in any desired position." (Specification at p. 16:14-25).

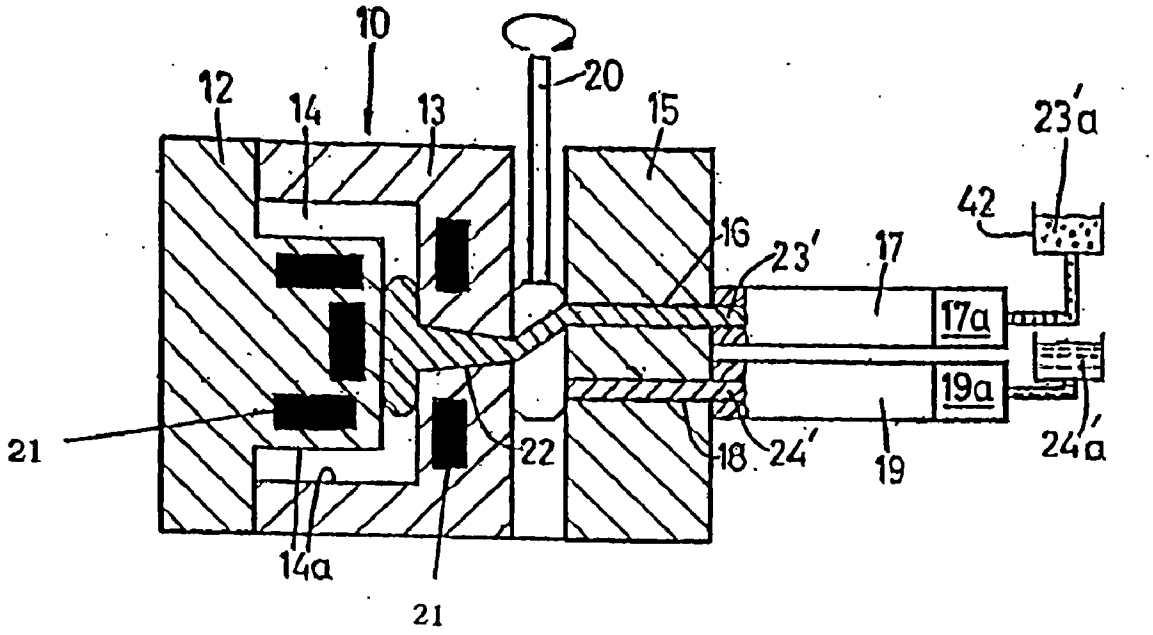

Fig. 5

The first extruder 17 has a heater 17a and is operated to deliver a coating material 23' that may contain magnetic particles. (*Id.* at p. 16:26-28). The coating material 23' is injected first into the cavity 14 through valve 20. (*Id.* at p. 17:4-8). The second extruder 19 has a heater 19a, and substrate material 24' is injected into the cavity 14. The

substrate material 24' may also contain magnetic particles. Injection of the substrate material 24' causes the coating material 23' to spread over the surfaces defined by the cavity 14, and injection is continued until all the inner surfaces of the mold 10 are coated with the coating material 23'. (*Id.* at p. 17:9-26).

The magnets 21 produce a magnetic field within the mold 10, and are arranged to manipulate the magnetic particles in the coating material 23' and/or the substrate material 24' before it has cured. The magnetic fields may thus be arranged to provide a uniform appearance, or alternatively, to provide an appearance or image that is textured, two-dimensional, or three-dimensional. (*Id.* p. 18:1-10).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 50-51, 57, 61, 71-79 and 81-84 are patentable under §103(a) over U.S. Patent No. 5,562,979 ("*Easterlow*") in view of U.S. Patent No. 5,942,324 ("*Chu*");

B. Whether claims 52-55 and 80 are patentable under §103(a) over the combination of *Easterlow* and *Chu* in view of U.S. Patent No. 6,579,397 ("*Spain*");

C. Whether claims 50-51, 57, 61, 71-79 and 81-84 are patentable under §103(a) over the combination of *Easterlow* and *Chu* in view of European Patent No. 0556449 ("*Kashiwagi*");

D. Whether claims 58-59 are patentable under §103(a) over the combination of *Easterlow* and *Chu* further in view of U.S. Patent No. 6,106,759 ("*Jarrard*");

E. Whether claim 60 is patentable under §103(a) over the combination of *Easterlow* and *Chu* further in view of U.S. Patent No. 6,000,922 ("*Wagner*");

F. Whether claims 62-66 and 68-69 are patentable under §103(a) over the combination of *Easterlow* and *Chu* further in view of WIPO Publication No. WO2002/090002 ("*Phillips*");

G. Whether claim 67 is patentable under §103(a) over the combination of *Easterlow*, *Chu* and *Phillips* in view of the English Abstract of Japanese Patent No. 01-259916 ("*Kiichi*"); and

H. Whether claim 70 is patentable under §103(a) over the combination of *Easterlow* and *Chu* in view of U.S. Publication No. 2003/0189475 ("*Blume*").

VII. ARGUMENTS

A. Claims 50-55 and 57-84 are Patentable

1. Grouping of Claims

All claims do not stand or fall together, but should be grouped and considered as set forth below.

2. Claim 50 is Patentable Over the Cited Combination

Independent claim 50 is the only independent claim on appeal, and applicant submits that the Examiner erred in rejecting the claim as obvious. If so, then all pending claims on appeal should be allowed.

The Examiner asserts alternative grounds for obviousness of the claim, namely the combination *Easterlow* and *Chu*, or the combination of *Easterlow* and *Chu* plus *Kashiwagi*. However, applicant contends that the Examiner has erred in this conclusion because:

- the cited prior art combinations are improper since the Examiner failed to properly consider the differences between the claim and the prior art, used impermissible hindsight reasoning, and since the references teach away from each other; and
- Claim 50 is not obvious from the cited prior art combinations.

The basic factual inquiries regarding obviousness involve (1) determining the scope and content of the prior art, (2) determining the differences between the claimed invention and the prior art, and (3) determining the level of ordinary skill in the art. *Graham v. John Deere Co.*, 383 US 1 (1966). Although *Easterlow*, *Chu* and *Kashiwagi* are generally relevant in that they all deal with applying a finish to a molded article, there are significant differences between claim 50 and the prior art that have not been properly considered by the Examiner. In determining the differences between the claimed invention and the prior art, the question is not whether the differences themselves would have been obvious, but whether the claimed invention ***as a whole***

would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530 (Fed. Cir. 1983).

The Examiner has failed to properly consider the claim as a whole, but instead, has taken known elements from different prior art references and asserted it would be obvious to combine them. In doing so, the Examiner has applied impermissible hindsight reasoning.

For example, the Examiner states that "Chu is only relied on for teaching that magnetic particles can be oriented using magnetic force. One of ordinary skill in the art at the time of the invention would have realized that the teaching of *Chu* can be applied to any molding process including injection molding, and is not restricted to spray coating processes only." (*See* Advisory Action dated 11/23/2009 at p. 2). Applicant respectfully disagrees, and submits that this statement reflects the failure to consider the claimed invention as a whole. "[D]ecomposing an invention into its constituent elements, finding each element in the prior art, and then claiming that it is easy to reassemble these elements into the invention, is a forbidden *ex post* analysis." *In re Mahurkar Patent Litigation*, 831 F.Supp 1354 (N.D. Ill. 1993), *aff'd*, 71 F.3d 1573 (Fed. Cir. 1995).

Applicant does not dispute the well-known fact that magnetic particles can be oriented using magnetic force, and submits that *Chu* and *Kashiwagi* are merely illustrative of this fact. However, this fact did not lead *Chu* or *Kashiwagi* to modify a dual injection molding coating process, like *Easterlow*, and apply magnetic fields to orient magnetic particles in the mold. Instead, both *Chu* and *Kashiwagi* take an already formed article and then apply a sprayed on metallic coating that is subsequently manipulated by a magnetic field.

Thus, applicant submits that neither *Chu* nor *Kashiwagi* may be properly combined with *Easterlow* in the manner proposed by the Examiner. Further support is found within each reference.

Easterlow is the U.S. equivalent of GB 2280401, discussed in the backround of applicant's specification at page 2, lines 17-26, and relates to an injection molding process. Easterlow is quite specifically and explicitly intended as an alternative to spraying metallic finishes onto molded parts. (*Easterlow* at col. 1:55-58 and col. 2:3-

20). According to *Easterlow*, the outer layer injected into the mold may include metal flakes for providing a metallic paint finish. (*Easterlow* at col. 5:5-8). However, there is no teaching or suggestion within *Easterlow* of using a magnetic field to manipulate and orient the metal flakes, as acknowledged by the Examiner. (*See* Office Action dated 9/11/2009 at p. 4).

Easterlow notes that metallic particles added to spray coatings do not align well during spraying, resulting in an unsatisfactory finish. (*Id.* at col. 2:21-32). *Easterlow* purports to solve this problem and also eliminate the need for the extra step of spray painting by injecting metallic materials with the flow of coating or paint material into the mold. The metallic particles are generally aligned simply by the flow of material into the mold. (*Id.* at col. 2:32-36; *see also* col. 5:18-27).

Without any support, the Examiner asserts that "the [magnetic] particles in Easterlow are not always aligned by the flow of material." (*See* Advisory Action at pp. 2-3). The Examiner makes this same unsupported assertion in the Final Office Action, stating the orientation of the metallic flakes 40 in Easterlow depends of the flow of the coating material, "which may not always result in uniform orientation of the flakes depending on the shape of the molded product." (*See* Office Action dated 9/11/2009 at p. 15). Applicant submits that the Examiner has drawn an erroneous conclusion based on the description in *Easterlow* that the flow of injected materials causes the metallic flakes to lie <u>*generally*</u> in a plane parallel with the flow (*see Easterlow* at col. 5:8-14), by placing undue emphasis on the word "generally." (See Advisory Action at p. 2, para. 3).

In fact, *Easterlow* reports that "the method in accordance with the invention produces surprisingly good results when a metallic finish is required . . . [and] provides the required orientation for an acceptable metal finish." (*Easterlow* at col. 5:23-27). Thus, there appears to be no basis for the Examiner's admonition that it would be obvious to one of ordinary skill in the art "to further align the metallic particles using the magnetic field disclosed in Chu." (*See* Advisory Action at pp. 2-3).

Chu came along later than *Easterlow*, but is directed specifically to a spray painting/coating process, and not to an injection molding process. While *Chu* also deals with molded articles, instead of modifying the molding process, *Chu* takes the extra step of spray coating a previously molded article. In particular, *Chu* describes a method of

manufacturing a colored wing mirror by first producing a colored, injection-molded housing, then spray coating the housing with a transparent layer. The spray coating may include metallic particles which are manipulated by a magnetic field to improve the overall appearance, i.e., by orienting the metallic particles so that they are arranged in parallel with the exterior face of the mirror housing. (*See Chu* at col. 8:7-14).

Despite the common knowledge that magnetic particles may be aligned using a magnetic field, it apparently did not occur to *Chu* to incorporate magnets into the mold to help orient the metallic material at that point, rather than using such a technique after molding the article, yet now, with the hindsight of applicant's specification, it becomes obvious?? Applicant respectfully disagrees.

The reason that magnetic particles are used and reoriented in *Chu* is due to the fact that the metallic coating process is a spray process, which inherently deposits the metal particles in random orientations. Thus, the magnetic field is used in *Chu* to change the orientation of the sprayed metal particles to be parallel to the surface of the article. (*See* Chu at col.8:7-14). In contrast, the metallic particles in *Easterlow* are already well oriented due to them being carried by the flow lines within the injection moulding (which are parallel to the surface of the molding). (*See Easterlow* at col.2: 21-36 and col.5: 18-27).

Since the metallic particles are well oriented by the injection process of *Easterlow*, and not randomly oriented by spray deposition, as in *Chu*, there is simply no motivation for the skilled person to apply the teachings from the spray coating process of *Chu* to reorient the metal particles in the dual injection process of *Easterlow*.

Furthermore, as neither *Chu* nor *Easterlow* recognize a need to reorient metal particles in a dual injection molding coating process, neither of these references provides any motivation to use magnetic particles in the injection process of *Easterlow*, i.e., metal particles of the type that can be manipulated by a magnetic field. In contrast, the only requirement in *Easterlow* is that the metal particles provide a metallic appearance.

Chu came up with a solution to the same problem as *Easterlow*, but for spray processes – he applies a magnetic field to the wet, coated part in order to align the metallic particles, for example, in parallel with the surface of the housing. (*Chu* at col.

2:59-63 and col. 8:7-14). However, a specific object of *Easterlow* was to "render unnecessary the subsequent painting of the moulding or moulded component." (*Easterlow* at col. 1:55-58). Thus, these references teach away from each other and are not properly combined.

Spray painting processes add significant time and cost to the manufacture of molded parts, and the use of metallic particles in such processes in particularly difficult. (See *Easterlow* at col. 2:21-32, and *Chu* At col. 1:38-52). In fact, it is more difficult for a spray coating to be adhered to a molded housing than it is to provide adherence between two co-molded layers. Accordingly, neither *Easterlow* nor *Chu* recognized that magnetic particles could be injected into the mold and then magnetically manipulated within the mold to achieve a desired visual appearance.

Kashiwagi, like *Chu*, relates to processes for painting or coating already formed articles, where the article is made of non-magnetic material. (See *Kashiwagi* at p.5:54-57). However, *Kashiwagi*, like *Chu*, does not contemplate nor mention any possibility of avoiding the extra coating step by applying magnetic fields to the materials injected into the mold.

Furthermore, a person skilled in this art would not combine the teachings of *Easterlow* with *Chu* and/or *Kashiwagi* for at least the following reasons. In *Easterlow*, the metallic flakes align with the direction of flow of the molding layer during its formation. (See *Easterlow* at col. 5:8-14). Accordingly, the metallic flakes are already oriented parallel to the exterior surface of the molding, and no further orientation by magnetic field is required.

The reason that *Chu* uses a magnetic field is that the metal flakes are applied to a previously molded housing by a spray coating and thus randomly oriented. The magnetic field is applied to orient the magnetic flakes in the spray coating such that the magnetic flakes line up parallel to the exterior surface of the housing. (See *Chu* at col. 8:7-14). However, since the metallic flakes in *Easterlow* are already oriented in parallel with the exterior surface simply by the flow of injected material, there is no benefit, and certainly no motivation, to use the magnetic field disclosed in *Chu* to achieve some particular orientation for a desired visual appearance. Even if one did use the magnetic field disclosed in *Chu* to modify the injection molding process of *Easterlow*, the

orientation of the metallic flakes would not actually be altered since they are already oriented parallel to the surface. Accordingly, the skilled artisan would not be motivated to combine the teachings of *Easterlow* with *Chu* and/or *Kashiwagi*, and even if they did, there would be no change in the orientation of the magnetic particles.

Although *Chu* and *Kashiwagi* do provide a solution to the problem of orienting magnetic particles in a sprayed-on coating, they do not do so in the innovative way described by claim 50, i.e., by applying one or more magnetic fields to at least a portion of at least one of the injected materials. Therefore, the cited references cannot properly be combined as proposed, and claim 50 is not obvious in view of the cited combinations.

For all the foregoing reasons, applicant submits that claim 50 is patentable over the cited references.

3. Claims 51, 57, 61, 71-79 and 81-84 are Patentable

Claims 51, 57, 61, 71-79 and 81-84 are dependent through claim 50 and stand or fall with claim 50.

4. Claims 52-55 and 80 are Patentable over the Cited Combination

Claims 52-55 are dependent through claim 50 and stand or fall with claim 50.

Claim 80 is dependent from dependent claim 52, and should be considered separately patentable. Claim 80 stands rejected as obvious over the combination of *Easterlow*, *Chu* and *Spain*.

In the Final Office Action, the Examiner states: "since ***the third material*** that forms the clear coat layer as taught by Spain et al. ***does not contain any magnetic particles***, the third material and the first or second materials ***clearly*** comprise different weight percentages." (*See* Office Action dated 9/11/2009, emphasis added). However, the Examiner fails to cite any support in *Spain* or elsewhere for this assertion.

Spain discloses methods for applying coatings to molded articles by a combination of paint coating, dry paint transfer-laminating, and thermoforming techniques. (*Spain* at col. 4:52-60). However, while *Spain* does disclose three layers of coatings, namely a paint coat 44, and clear coat 45 and a color coat 46 (*See* Fig. 4 and col. x:40-42), none of the layers includes magnetic particles. Claim 80 by its terms

requires that two of the three materials include magnetic particles, i.e., "wherein said first and second or third materials comprise different weight percentages of magnetic particles." While *Spain* does teach that the composition of individual layers may be different, see, e.g., col. 12:19-40, applicant submits that such teachings relate to the effectiveness and performance of the chemical composition, and not to the ability to orient magnetic particles within the composition. There is no basis for concluding that *Spain* would make obvious a three layer coating, wherein at least two of the three layers has different weight percentages of magnetic particles (claim 80) in order to create a desired visual effect (claim 50). For this reason, applicant believes that claim 80 is patentable over the cited combination.

5. Claims 58-59 are Patentable

Claims 58-59 are dependent through claim 50 and stand or fall with claim 50.

6. Claim 60 is Patentable

Claim 60 is dependent through claim 50 and stands or fall with claim 50.

7. Claims 62-66 and 68-69 are Patentable

Claims 62-66 and 68-69 are dependent through claim 50 and stand or fall with claim 50.

8. Claim 67 is Patentable

Claim 67 is dependent through claim 50 and stands or fall with claim 50.

9. Claim 70 is Patentable

Claim 70 is dependent through claim 50 and stands or fall with claim 50.

Respectfully submitted,

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CLAIMS APPENDIX

CLAIMS ON APPEAL

50. A method of forming a moulding by multiple injection moulding, said method comprising:

injecting a first material into a mould;

injecting at least a second material into said mould behind said first material so that said first material covers a surface of said mould, wherein at least one of said materials includes magnetic particles; and

applying one or more magnetic fields to at least a portion of at least one of said injected materials including magnetic particles so as to change the orientation and/or distribution of magnetic particles in at least one of said materials, wherein said one or more magnetic fields changes the orientation and/or distribution of at least some of said magnetic particles in order to give a desired visual effect in at least a part of the moulding.

51. A method as claimed in claim 50, wherein said second material is injected into said mould before said first material has cured completely.

52. A method as claimed in claim 50, wherein at least a third material is injected into said mould after said second material is injected.

53. A method as claimed in claim 52, wherein said third material is injected into said mould before said second material has cured completely.

54. A method as claimed in claim 52, wherein said first and/or second and/or third material comprises magnetic particles.

55. A method as claimed in claim 52, wherein said first and/or second and/or third material is substantially translucent or transparent.

57. A method as claimed in claim 50, wherein said magnetic fields orientate and/or distribute at least some of said magnetic particles substantially uniformly.

58. A method as claimed in claim 50, wherein the strength of said magnetic fields is varied with time.

59. A method as claimed in claim 58, wherein the strength of said magnetic fields is varied by varying the power delivered to one or more electromagnets with time.

60. A method as claimed in claim 50, wherein the strength and/or location of said magnetic fields is varied with time by moving one or more permanent magnets or electromagnets relative to said mould.

61. A method as claimed in claim 50, wherein said magnetic fields are applied in said mould before said at least one material has cured completely.

62. A method as claimed in claim 50, wherein said magnetic particles comprise nickel.

63. A method as claimed in claim 62, wherein said magnetic particles comprise leafing grade nickel flakes.

64. A method as claimed in claim 50, wherein said magnetic particles comprise a core and an outer coating.

65. A method as claimed in claim 64, wherein said core is a magnetic material.

66. A method as claimed in claim 64, wherein said coating is aluminum, magnesium fluoride and aluminum or magnesium fluoride and a metal.

67. A method as claimed in claim 64, wherein said coating is coloured.

68. A method as claimed in claim 50, wherein said magnetic particles are highly reflective.

69. A method as claimed in claim 50, wherein said magnetic particles are highly absorptive of light.

70. A method as claimed in claim 50, wherein said magnetic particles are substantially spherical.

71. A method as claimed in claim 50, wherein said magnetic particles have an elongated, non-spherical shape.

72. A method as claimed in claim 50, wherein said magnetic particles comprise 2-15% of the weight of at least one of said materials.

73. A method as claimed in claim 72, wherein said magnetic particles comprise 3-10% of the weight of at least one of said materials.

74. A method as claimed in claim 73, wherein said magnetic particles comprise about 5% of the weight of at least one of said materials.

75. A method as claimed in claim 50, wherein said magnetic particles comprise 0.1-15% of the weight of at least one of said materials.

76. A method as claimed in claim 75, wherein said magnetic particles comprise 0.5-10% of the weight of at least one of said materials.

77. A method as claimed in claim 75, wherein said magnetic particles comprise 0.1-3% of the weight of at least one of said materials.

78. A method as claimed in claim 76, wherein said magnetic particles comprise about 2% of the weight of at least one of said materials.

79. A method as claimed in claim 76, wherein said magnetic particles comprise about 3% of the weight of at least one of said materials.

80. A method as claimed in claim 52, wherein said first and second or third materials comprise different weight percentages of magnetic particles.

81. A method as claimed in claim 50, wherein at least one of said materials is injected into said mould whilst said mould is at an elevated temperature.

82. A method as claimed in claim 81, wherein said temperature is in a range from 20°C to 150°C.

83. A method as claimed in claim 50, wherein said moulding is partially cured in said mould and is heated until completely cured after removal from said mould.

84. A method as claimed in claim 83, wherein one or more further magnetic fields are applied to said moulding after it has been removed from said mould.

EVIDENCE APPENDIX
-NONE-

RELATED PROCEEDINGS APPENDIX
-NONE-